EXHIBIT A
Mill Creek Upslope Road Sediment Reduction Project
STATEMENT OF WORK

Under direction of the Grantor, and under the following conditions and terms, the Grantee will:

1. Implement site specific erosion control measures to in the Mill Creek, Navarro River watershed in Mendocino County (T15N R15W Sec 34), to remediate approximately 18,164 cubic yards of potential sediment delivery to streams inhabited by anadromous salmonids. Remediation work will include sediment control upgrades at approximately 26 sites along approximately 6 miles of road, where future sediment delivery has been found likely to occur. Treatment sites will include 10 stream crossings. Sediment remediation work will include culvert installation, culvert replacement at 5 sites, downspout installation at 3 sites, culvert cleaning at 1 site, flared inlet installation at 1 site, soil excavation at 1 site, rolling dip installation, wet crossing installation, critical dip installation at 6 sites, road berm removal, road outsloping, and rocking of road surfaces. Decommissioning of roads may take place on roads that have been recommended for permanent closure.

2. Sites which are expected to erode and deliver sediment to the stream are the only locations where work will be authorized for reimbursement under the terms of this agreement. Treatments and sites may be modified upon approval by the DFG Contract Manager for purposes of avoiding environmental impacts or increasing the effectiveness or feasibility of the project. Reimbursement will not be authorized for work done to improve esthetic values only.

3. Culverts that are replaced in fish bearing reaches of streams will be done in such a manner that will allow for fish passage

4. All road upgrading or decommissioning will be done in accordance with techniques described in the "Handbook for Forest and Ranch Roads" (Weaver and Hagans 1994) or Part X of the "California Salmonid Stream Restoration Manual" (Flosi et al. 1998).

5. The Grantee will acknowledge the participation of the Department of Fish and Game, >ENTER FUNDING SOURCE< funds on any signs, flyers, or other types of written communication or notice to advertise or explain the project.

6. Upon completion of the project, the Grantee shall submit two hard copies of a final written report and one electronic, *Microsoft Word* compatible, copy on 3.5 inch floppy disk(s) or CD. The report shall include, but not necessarily be limited to the following information: (1) the grant number, (2) project name; (3) geographic area (e.g., watershed name); (4) location of work – show project

location using U.S.G.S. 7.5 minute topographical map or appropriately scaled topographical map; (5) geospatial reference/location (lat/long is preferred – defined as point, line, or polygon); (6) project start and end dates and the number of person hours expended; (7) total of each fund source expended to complete the project, breaking down Grant dollars and any other funding, whether in dollars or in-kind service; (8) expected benefits to anadromous salmonids from the project; (9) labeled before and after photographs of any restoration activities and techniques; (10) specific project access using public and private roads and trails, with landowner name and address; (11) a complete as built project description; and (12) the following specific measurables:

- Type and number of sites treated (e.g., fencing, road removal)
- # of miles of road decommissioned, upgraded or restored (e.g., closed, obliterated, treated)
- # of cubic yards of sediment saved from entering the steam.

Table 1. Site classification and sediment yield from all inventoried sites with future sediment delivery, Holmes Ranch assessment area, Mill Creek, Mendocino County, California.

Site Type	Number of sites or road miles to treat	Sites recommended for treatment		
		Future yield (yds^3)	Stream crossings w/ a diversion potential (#)	Stream culverts likely to plug (plug potential rating = high or moderate)
Stream crossings	10	4,400	7	7
Other	16	175	–	–
Total (all sites)	26	4,575	7	7
Persistent surface erosion[1]	5.79	13,589	–	–
Totals	26	18,164	7	7

[1] Assumes 30' wide road prism and cutbank contributing area, and 0.4' of road/cutbank surface lowering over a 2 decade period.

Table 2. Treatment priorities for inventoried sediment sources, Holmes Ranch assessment area, Mill Creek, Mendocino County, California.

Treatment Priority	Upgrade sites (# and site #)	Problem	Future sediment delivery (yds^3)
High	**2** (site #: 103, 121)	1 stream crossing, 1 other	435
High - Moderate	**1** (site #: 11)	1 stream crossing	1,939
Moderate	**5** (site #: 90, 119, 122, 126, 128)	3 stream crossings, 2 other	2,587
Moderate - Low	**6** (site #: 89, 104, 118 123, 127, 132)	3 stream crossings, 3 other	4,028
Low	**12** (site #: 88, 91,105, 106, 116, 120, 124, 125, 129, 130, 131, 133)	2 stream crossings, 10 other	9,175
Total	**26**	**10 stream crossings, 16 other**	**18,164**

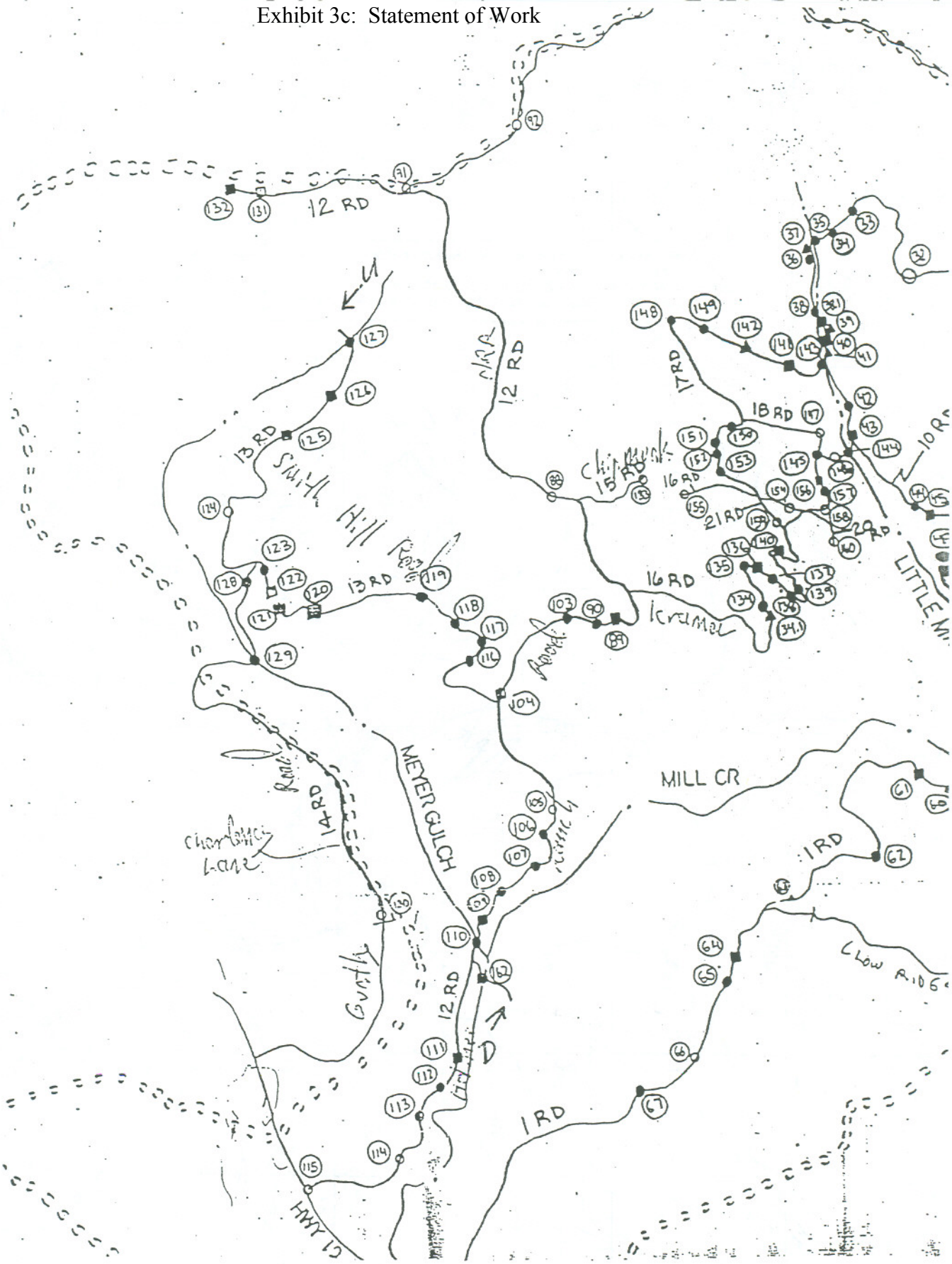
Table 3. Recommended treatments for selected inventoried sites in the Holmes Ranch assessment area, Mill Creek, Mendocino County, California.

Treatment	No.	Comment	Treatment	No.	Comment
Critical dip	6	To prevent stream diversions	Outslope and remove ditch	4	Outslope and remove ditch along 2,229 feet of road to improve road surface drainage
Replace CMP	5	Upgrade an undersized CMP	Outslope and retain ditch	16	Outslope and retain ditch along 9,787 feet of road to improve road surface drainage
Excavate soil	1	Typically fillslope & crossing excavations; permanent excavation of 1,239 yds^3	Install rolling dips	58	Install rolling dips to improve road drainage
Down spouts	3	Installed to protect the outlet fillslope from erosion	Remove berm	7	Remove 7,257feet of berm to improve road surface drainage
Clean culvert	1	Clean culvert inlet to reduce plugging potential	Install ditch relief CMP	4	Install ditch relief culverts to improve road surface drainage
Install flared inlet	1	Install flared inlet to increase culvert capacity	Rock road surface	–	Rock road surface using 3,000 yds^3 of road rock at 58 proposed rolling dips and along selected sections of road.

Table 4. Estimated heavy equipment and labor requirements for treatment of selected inventoried sites with future sediment delivery, Holmes Ranch assessment area, Mill Creek, Mendocino County, California.

Treatment Immediacy	Site (#)	Total Excavated Volume (yds^3)	Excavator (hrs)	Tractor (hrs)	Grader (hrs)	Backhoe (hrs)	Labor (hrs)
High, High/Moderate	3	1,698	34	35	3	0	14
Moderate, Low/Moderate	11	668	29	45	15	3	32
Low	12	0	0	37	17	6	0
Total	**26**	**2,366**	**63**	**117**	**35**	**9**	**46**

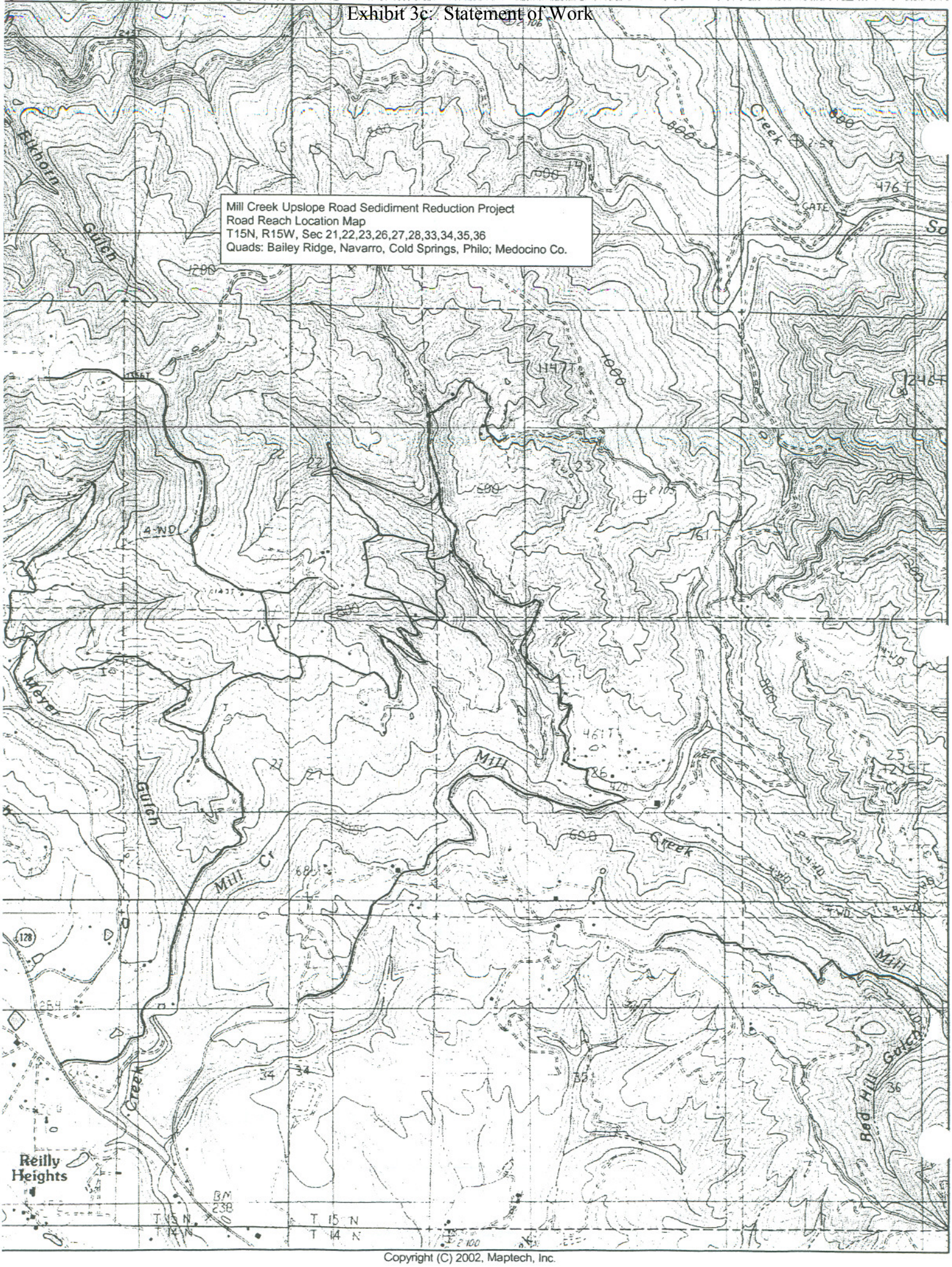
[1] Total excavated volume includes permanently excavated material and temporarily excavated materials used in backfilling upgraded stream crossings.

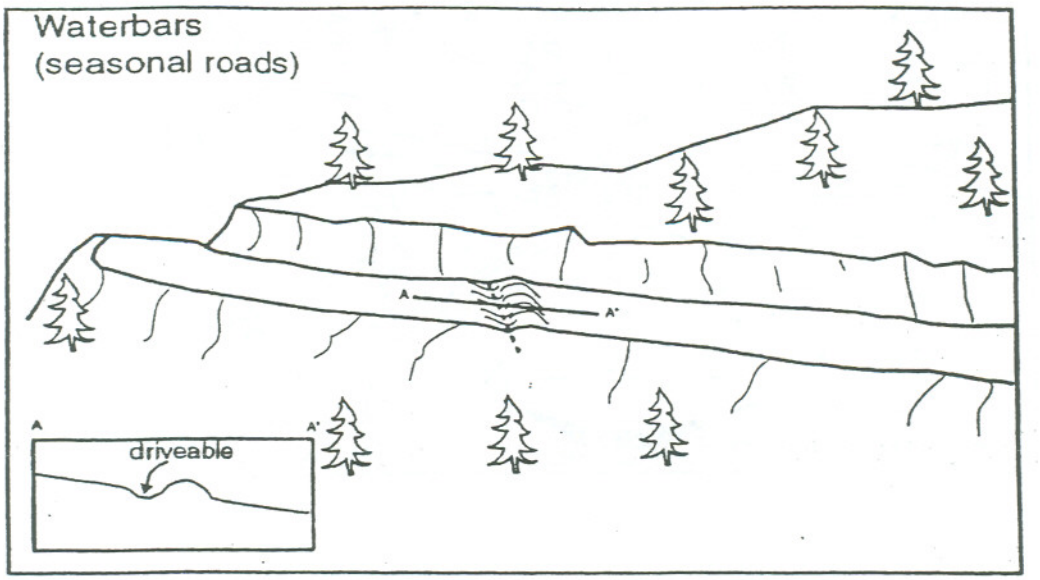


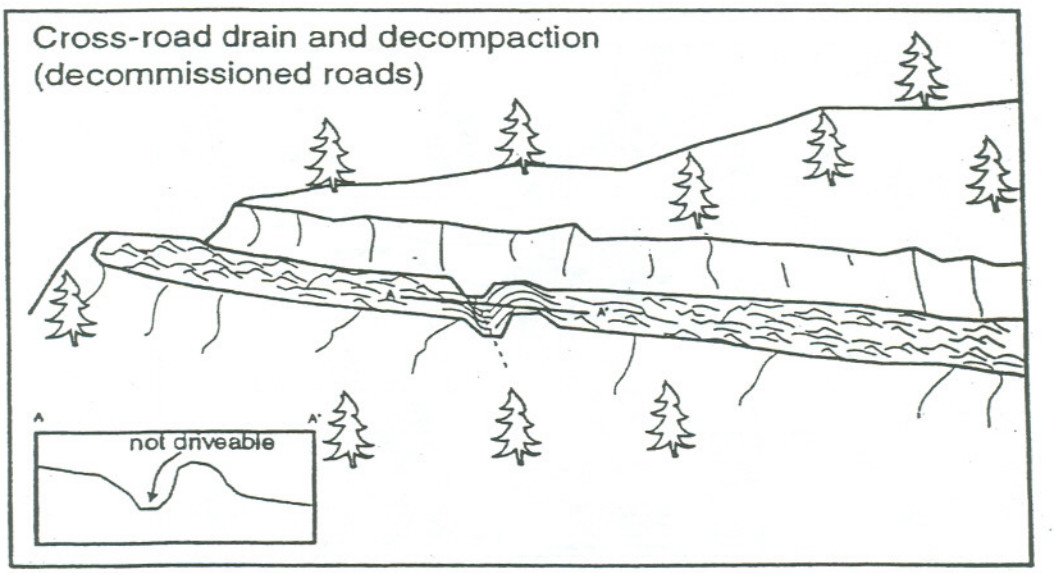
Plan View Diagram: Mill Creek Upslope Roads Sediment Reduction Project

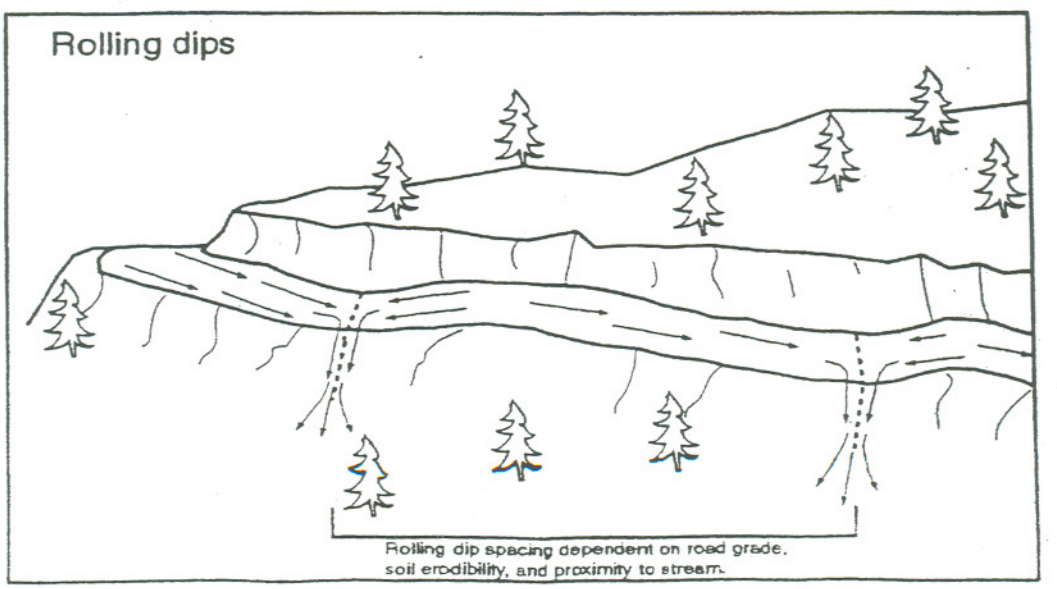
Scale

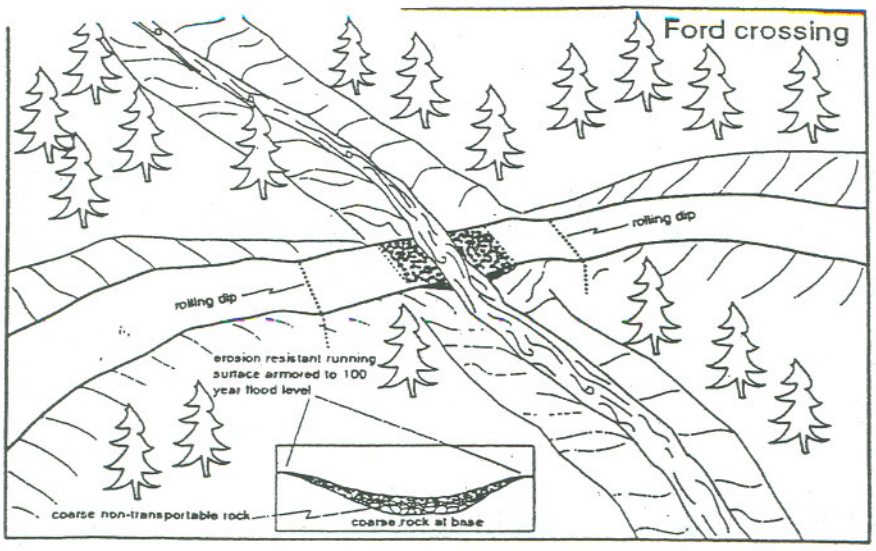
0 1000' 2000'

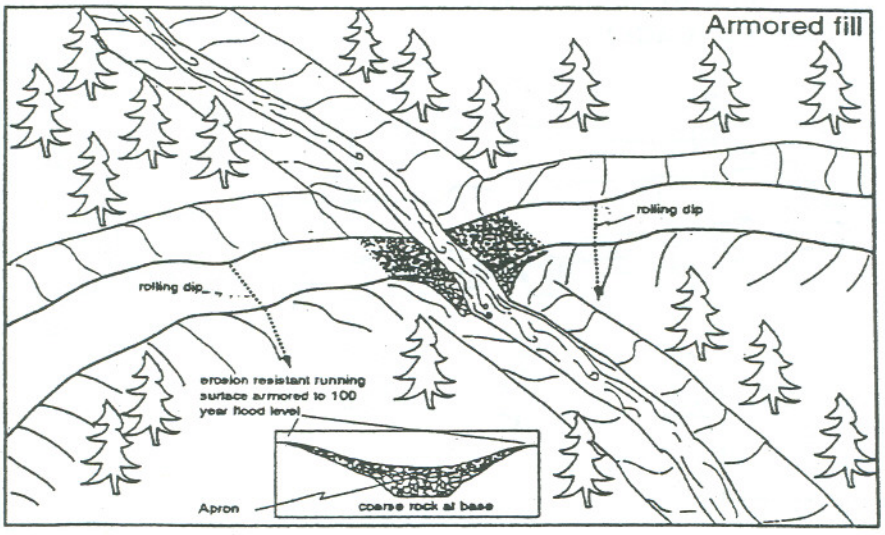


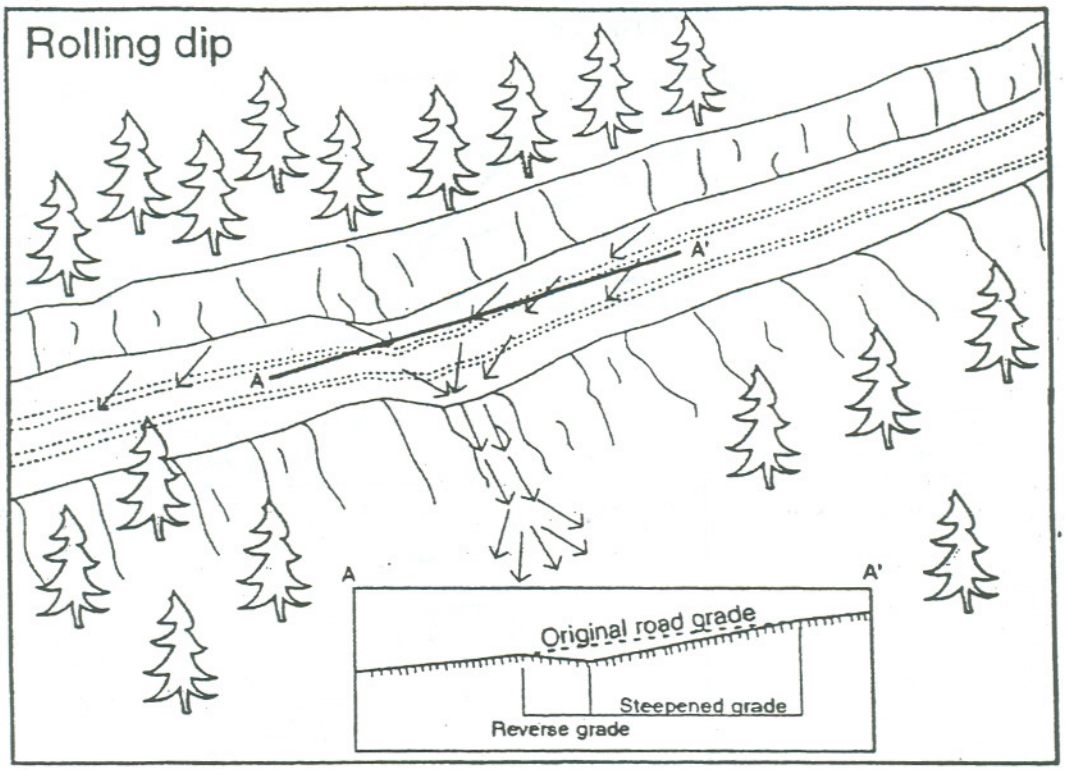

Waterbars
(seasonal roads)
A
A'
A
A'
driveable


Cross-road drain and decompaction
(decommissioned roads)
A
A'
A
A'
not driveable

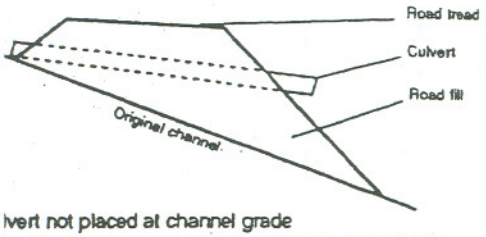

Rolling dips
Rolling dip spacing dependent on road grade,
soil erodibility, and proximity to stream.


Ford crossing
rolling dip
rolling dip
erosion resistant running
surface armored to 100
year flood level
coarse non-transportable rock
coarse rock at base


Armored fill
rolling dip
rolling dip
erosion resistant running
surface armored to 100
year flood level
Apron
coarse rock at base

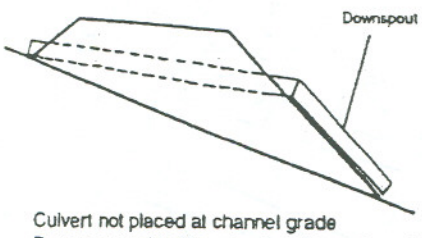

Rolling dip
A
A'
A
A'
Original road grade
Steepened grade
Reverse grade

Existing



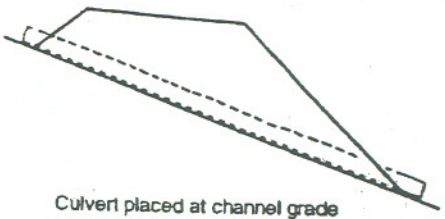
lvert not placed at channel grade
lvert outlet does not extend past base of road fill

Upgraded



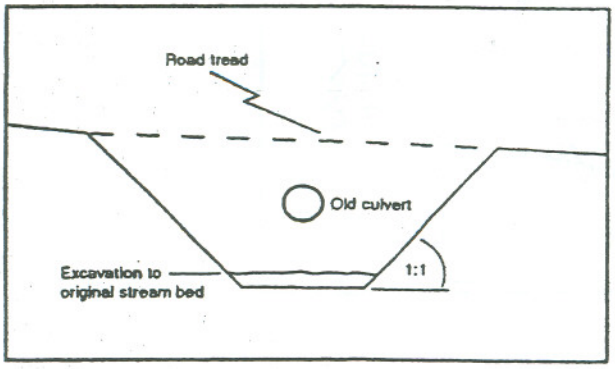
Culvert not placed at channel grade
Downspout added to extend outlet past road fill

Upgraded (preferred design option)

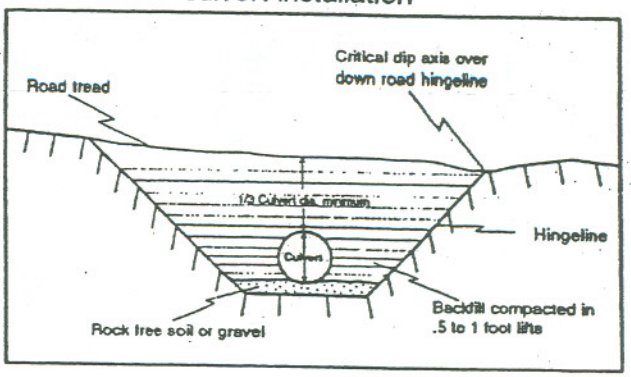


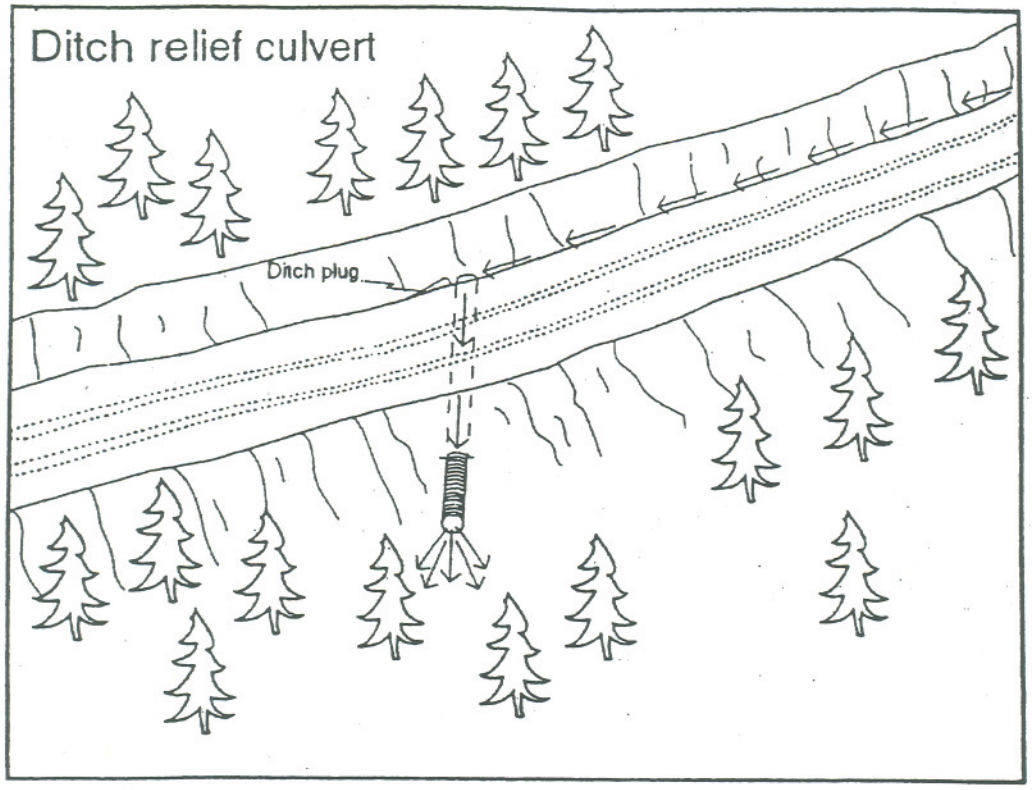
Culvert placed at channel grade
Culvert inlet and outlet resting on or partially in the original stream bed

Excavation in preparation for upgrading culverted stream crossing



Upgraded stream crossing culvert installation





Cross sections of typical installations